

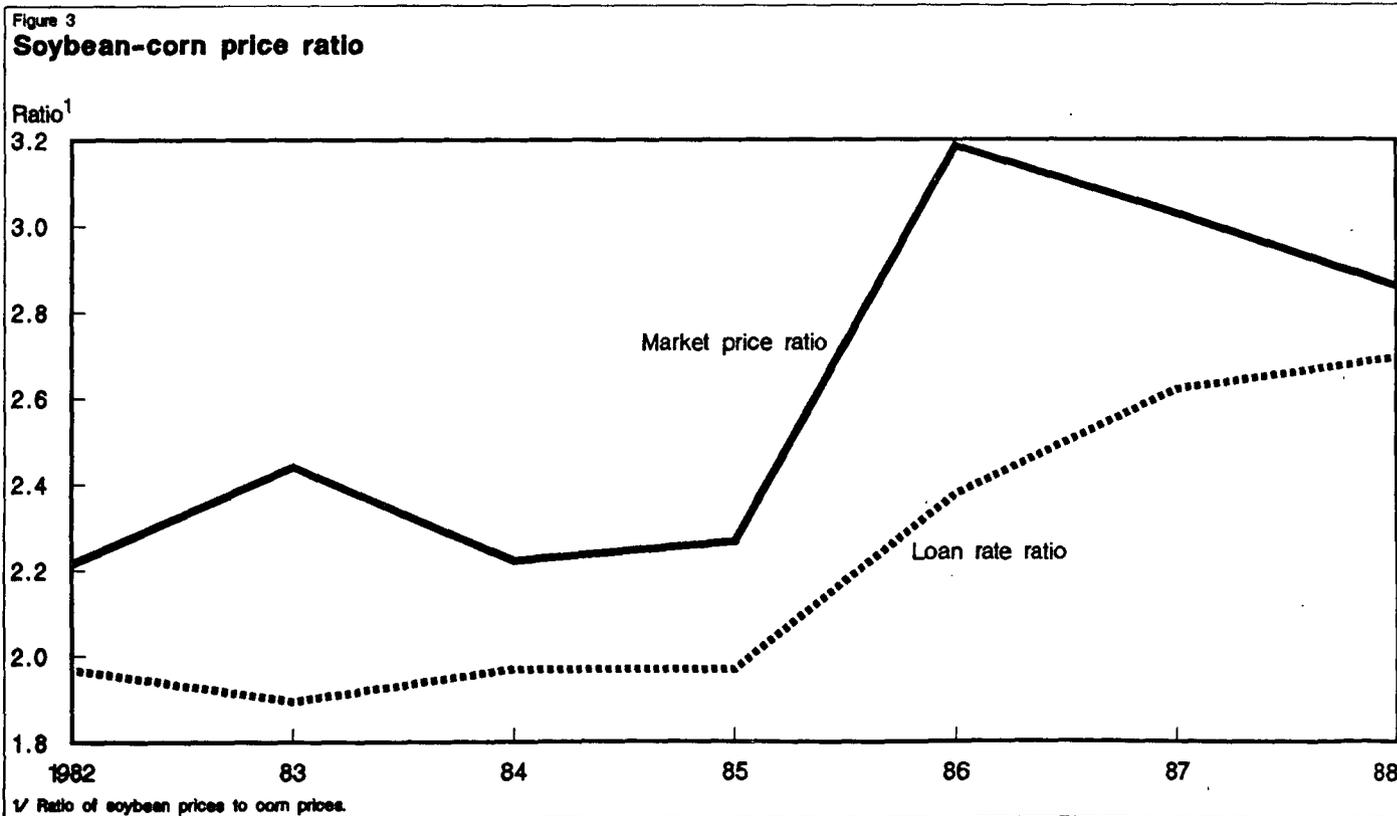
competing crops, such as cotton. Drought and disease have depressed soybean yields in the past decade. Cotton yields have risen sharply, further increasing incentives to grow cotton in place of soybeans.

Market prices for corn have declined since 1985 relative to those for soybeans (fig. 3). A marked increase in the soybean-corn price ratio for both market prices and loan rates is evident since the passage of the 1985 Act (1986-89). Higher target prices for corn have encouraged corn production at the expense of soybeans and nonprogram crops. (Target prices for corn cannot be compared directly to soybean prices because program factors such as set-aside requirements and paid land diversion must be considered when comparing crop target prices and market prices. Rather, total returns would have to be compared with target prices for corn versus market prices for soybeans.) Two basic reasons for the change in the corn-soybean price ratio are: (1) price support loan levels for corn have been lowered proportionately more than announced price support levels for soybeans; and (2) massive corn surpluses, accessible through the exchange of CCC commodity certificates, have kept market prices for corn relatively lower than they would be otherwise (Glauber, 1988a).

Foreign producers have responded to this higher soybean-corn price ratio by increasing oilseeds plantings. However, U.S. income and price support programs for corn, wheat, and cotton have limited U.S. production responses to higher market prices for soybeans.

Crop acreage base is determined by a moving average of acreage planted in program commodities under current legislation. Therefore, soybeans cannot be planted on a farm's acreage base without sacrificing (1) part of the base for program crops and (2) deficiency payments for current and subsequent years. Deficiency payments for basic commodities make growing those crops on farm acreage base more profitable than growing soybeans despite higher market prices for soybeans (Glauber, 1988b).

The Disaster Assistance Act of 1988 requires the Secretary to allow producers of basic commodities with a crop acreage base to plant 10-25 percent of their permitted acreage to soybeans or sunflowers. However, additional soybean and sunflower acreage is not allowed to reduce the average market price of soybeans below 115 percent of the previous year's basic loan rate. That market price would be \$5.49 per bushel (115 percent of \$4.77 per bushel) in 1989/90. Producers requested authorization to plant over 3.5 million



acres of soybeans on crop acreage bases in the 10-25 signup. The Secretary announced that 80 percent of the soybeans requested by producers could be planted on permitted acreage of 1989 program crops, limiting the maximum acreage to about 2.8 million. Domestic soybean prices are not competitive with 1989/90 target prices for program crops, and soybeans actually planted on permitted acres are considerably less than the maximum authorized by the Secretary.

Program benefits in the 1990 crop year for grains will continue to limit the acreage diverted to soybeans. Upland cotton returns, for both program participants and nonparticipants, are likely to limit soybean plantings on cotton acreage to a small amount.

More double-cropping of wheat and soybeans occurred in the South in 1988/89 because of higher soybean prices and a smaller acreage reduction requirement for winter wheat acreage (Westcott). Some increase in double-cropping of wheat and soybeans is possible if the acreage reduction requirement is continued at a low level for 1989/90 winter wheat, which is expected given relatively low 1988/89 ending stocks of wheat following the drought. Three factors—higher prices for soybeans, the 10-25 provision of the 1988 Act, and lower loan rates and target prices for corn—increased incentives for U.S. farmers to produce soybeans in 1989. Only increased production incentives such as these will increase U.S. soybean production and exports.

A Marketing Loan for Soybeans

A marketing loan would allow producers to repay their price support loans at world prices when world prices are less than announced loan rates. Therefore, a marketing loan should reduce crop forfeitures and reduce CCC storage and handling costs. Theoretically, prices of U.S. commodities would be more competitive, incomes of domestic producers would be supported, and foreign producers would be discouraged from expanding their production.

The Secretary did not implement marketing loans for the 1986-89 crops of wheat, feed grains, and soybeans. In accordance with section 14 of the Farm Disaster Assistance Act of 1987, the Secretary submitted a report to the House Committee on Agriculture and the Senate Committee on Agriculture, Nutrition, and Forestry. The report explained why marketing loans were not implemented for wheat, feed grains, and soybean crops in 1987. According to that report, marketing loans for these crops would have only a moderate effect on domestic use and exports, and other less costly policies could lower domestic prices

as effectively as marketing loans. It was determined that a marketing loan for soybeans could lower domestic prices if world prices were significantly below U.S. prices, but at a substantial cost (Hanthorn and Glauber). World soybean prices generally have been at or above U.S. market prices and loan rates.

Section 301 of the 1988 Act requires the Secretary to submit a statement to the House and Senate agriculture committees discussing the reasons for and against implementing a marketing loan for the 1989 and 1990 crops of soybeans. Due to relatively high expected prices in 1989/90, a marketing loan was not implemented for the 1989 soybean crop. If implemented, it would not change the relative profitabilities and, therefore, production and marketing of soybeans. A marketing loan could be considered as a mechanism to encourage U.S. production and exports of soybeans, if U.S. loan rates exceed adjusted world prices. U.S. loan rates are not likely to exceed world prices through the 1990/91 marketing year, the final year covered under 1985 farm legislation.

International Issues Affecting Oilseeds

Proposals for reducing trade-distorting agricultural policies are a focus of current GATT multilateral trade negotiations, which include 105 participating nations. If trade barriers and price supports are lowered through the negotiations, heavily subsidized oilseed producers could reduce output and import more oilseeds. The magnitude of these adjustments would depend on relative price changes among oilseeds and grains. Increased import demand could accommodate more exports from lower cost oilseed producers, such as Argentina, the United States, and Brazil. Soybean production and exports would likely increase for all three of these major soybean exporters. U.S. and Argentine sunflower producers could also increase production and exports in response to trade liberalization. Canada could increase rapeseed production and exports of rapeseed and rapeseed oil.

Additional Readings

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Appendix table 1—Distribution of soybean farms, by value of sales, 1987

Region	Value of sales					Total farms
	\$100,000 or more	\$40,000 to \$99,999	\$20,000 to \$39,999	\$10,000 to \$19,999	Less than \$10,000	
	Percent ¹					Number
Corn Belt	25.3	25.6	17.5	14.3	17.2	239,334
Northern Plains	27.0	30.5	18.6	12.3	11.5	58,029
Lake States	26.5	26.8	17.2	13.6	15.9	54,474
Appalachia	21.3	19.0	15.5	15.4	28.9	37,580
Delta	38.8	20.5	11.0	9.3	20.4	20,357
Southeast	25.6	18.7	13.1	13.5	29.1	15,835
Northeast	31.6	17.7	12.3	13.4	25.0	10,737
Southern Plains	30.4	22.1	16.1	14.5	16.9	2,655
United States	26.2	25.1	16.8	13.8	18.1	439,093 ²

¹ Totals may not add to 100 percent due to rounding.

² Regional totals do not add to U.S. total because not all farms are reported in each state. All regions have fewer farms here than in table 1, Distribution of soybean farms, by acres of soybeans harvested, 1987, except the Northeast (because New York soybeans are included in this table but not in table 1).

Source: 1987 Census of Agriculture.

Appendix table 2—Value comparisons for U.S. soybeans, 1950–88

Year beginning Sept. 1	Loan value		Market value		Market value of U.S. production	
	Nominal ¹	Real ²	Nominal ¹	Real ²	Nominal	Real ²
	----- Dollars per acre -----				----- Million dollars -----	
1950	44	184	53	222	738	3,088
1951	51	205	57	229	773	3,104
1952	53	209	56	220	811	3,193
1953	46	178	49	189	733	2,830
1954	44	167	49	186	841	3,198
1955	41	151	45	166	831	3,066
1956	47	168	47	168	980	3,500
1957	48	166	48	166	1,003	3,459
1958	51	172	48	162	1,160	3,906
1959	44	145	46	151	1,046	3,441
1960	43	139	50	162	1,185	3,835
1961	58	186	57	183	1,544	4,949
1962	55	172	57	179	1,564	4,903
1963	53	164	59	182	1,755	5,417
1964	51	155	60	182	1,836	5,581
1965	55	163	62	183	2,151	6,364
1966	64	183	70	200	2,554	7,297
1967	61	170	61	170	2,434	6,780
1968	67	178	65	172	2,689	7,133
1969	62	156	64	161	2,664	6,693
1970	60	143	76	181	3,215	7,655
1971	62	140	83	187	3,560	8,018
1972	63	135	122	262	5,550	11,936
1973	63	127	158	319	8,787	17,752
1974	53	98	157	290	8,070	14,944
1975	—	—	142	239	7,618	12,847
1976	65	103	178	282	8,775	13,906
1977	107	159	180	267	10,392	15,441
1978	132	183	196	271	12,446	17,238
1979	144	183	202	257	14,197	18,062
1980	133	155	201	235	13,607	15,877
1981	151	161	182	194	12,014	12,781
1982	158	158	178	178	12,375	12,375
1983	132	127	205	197	12,808	12,327
1984	141	131	164	152	10,868	10,091
1985	171	154	172	155	10,597	9,530
1986	152	133	159	139	9,274	8,128
1987	161	137	198	168	11,305	9,605
1988 ³	128	105	197	162	11,309	9,292

— = Not applicable. No price support loan was offered in 1975.

¹ Loan rate or average farm price times yield per harvested acre.

² GNP implicit price deflator (1982 = 1.0) was used.

³ Preliminary.

Source: Hacklander and Gardiner (1984); and U.S. Department of Agriculture, Economic Research Service, Foreign Agricultural Service, *World Agricultural Supply and Demand Estimates*, Aug. 10, 1989.

Appendix table 3—Prices and ending stocks for U.S. soybeans, 1952–89

Year beginning Sept. 1	Ending stocks			Average price received by farmers	Loan rate
	CCC owned	Free	Total		
	Million bushels				
1952	2	20	22	2.72	2.56
1953	0	8	8	2.72	2.56
1954	7	16	23	2.46	2.22
1955	0	21	21	2.22	2.04
1956	5	27	32	2.18	2.15
1957	14	29	43	2.07	2.09
1958	44	44	88	2.00	2.09
1959	10	42	52	1.96	1.85
1960	0	27	27	2.13	1.85
1961	43	35	78	2.28	2.30
1962	2	44	46	2.34	2.25
1963	3	64	67	2.51	2.25
1964	0	30	30	2.62	2.25
1965	0	36	36	2.54	2.25
1966	7	83	90	2.75	2.50
1967	29	137	166	2.49	2.50
1968	171	156	327	2.43	2.50
1969	150	80	230	2.35	2.25
1970	3	97	99	2.85	2.25
1971	0	72	72	3.03	2.25
1972	0	60	60	4.37	2.25
1973	0	171	171	5.68	2.25
1974	0	188	188	6.64	2.25
1975	0	245	245	4.92	NA
1976	0	103	103	6.81	2.50
1977	0	161	161	5.88	3.50
1978	0	176	176	6.66	4.50
1979	0	358	358	6.28	4.50
1980	0	313	313	7.57	5.02
1981	1	253	254	6.04	5.02
1982	21	324	345	5.69	5.02
1983	1	175	176	7.83	5.02
1984	4	312	316	5.84	5.02
1985	131	405	536	5.05	5.02
1986	249	187	436	4.78	4.77 ¹
1987	7	295	302	5.88	4.77
1988 ²	0	155	155	7.35	4.77
1989 ³	NA	NA	285	4.75–6.00	4.53

NA = Not available. No price support loan was offered in 1975.

¹ Gramm-Rudman-Hollings Deficit Reduction Act reduced effective loan rate to \$4.56 per bushel.

² Preliminary.

³ Forecast.

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, *Agricultural Statistics*, annual issues, 1952–88; and U.S. Department of Agriculture, Economic Research Service, Foreign Agricultural Service, *World Agricultural Supply and Demand Estimates*, Aug. 10, 1989.

Appendix table 4—Major oilseeds: World supply and use, 1985–89

Item	1985/86	1986/87	1987/88	1988/89 ¹	1989/90 ²
<i>Million metric tons</i>					
Production:					
Soybean	97.03	98.01	103.35	94.08	107.92
Cottonseed	30.63	27.18	31.14	32.25	30.95
Peanut	19.99	20.39	20.34	22.77	22.88
Sunflowerseed	19.56	19.25	20.57	20.40	21.15
Rapeseed	18.70	19.55	23.23	22.43	21.86
Flaxseed	2.35	2.66	2.26	1.74	2.14
Copra	5.31	4.71	4.32	4.52	4.70
Palm kernel	2.51	2.50	2.69	2.92	3.08
Total	196.08	194.24	207.89	201.09	214.68
Exports:					
Soybean	26.07	28.56	30.05	22.92	25.80
Cottonseed	.28	.24	.32	.26	.31
Peanut	1.37	1.28	1.31	1.29	1.33
Sunflowerseed	1.98	1.81	2.22	1.90	1.30
Rapeseed	3.63	4.58	4.53	4.44	4.20
Flaxseed	.67	.79	.71	.54	.61
Copra	.44	.32	.27	.28	.30
Palm kernel	.12	.12	.12	.12	.12
Total	34.54	37.69	39.52	31.75	33.97
Imports:					
Soybean	27.55	29.23	29.01	23.76	25.50
Cottonseed	.26	.25	.32	.26	.31
Peanut	1.26	1.27	1.24	1.24	1.25
Sunflowerseed	1.89	1.94	2.07	1.92	1.48
Rapeseed	3.65	4.92	4.39	4.41	4.19
Flaxseed	.73	.80	.63	.59	.63
Copra	.38	.32	.27	.32	.29
Palm kernel	.11	.12	.10	.10	.09
Total	35.82	38.84	38.02	32.58	33.75
Crush:					
Soybeans	77.43	85.48	85.24	81.05	88.27
Cottonseed	23.92	21.24	23.82	24.82	24.12
Peanut	10.46	10.89	10.54	12.62	12.33
Sunflowerseed	16.71	16.44	17.63	17.92	18.70
Rapeseed	16.99	18.44	20.88	20.31	20.43
Flaxseed	1.79	1.87	1.77	1.56	1.61
Copra	5.31	4.65	4.28	4.43	4.58
Palm kernel	2.42	2.39	2.70	2.87	3.02
Total	155.04	161.38	166.84	165.57	173.06

Note: Trade and crush are aggregated using individual marketing years, except Argentina and Brazil, which are adjusted to an Oct.–Sept. year.

¹ Preliminary.

² Forecast.

Source: U.S. Department of Agriculture, Foreign Agricultural Service, *World Oilseed Situation and Market Highlights*, FOP 8–89, August 1989.

Appendix table 5—World soybean production, consumption, exports, and ending stocks, 1964–89

Crop year ¹	Production	Consumption	Exports	Ending stocks	Stocks-to-use ratio
					Percent
----- Million metric tons -----					
1964/65	29.24	30.28	6.55	1.62	5.4
1965/66	31.70	31.60	7.59	1.80	5.7
1966/67	36.47	35.06	8.12	3.33	9.5
1967/68	37.77	36.08	7.99	5.42	15.0
1968/69	41.70	38.10	8.68	9.72	25.5
1969/70	42.48	44.70	12.57	7.28	16.3
1970/71	44.28	48.03	12.58	3.60	7.5
1971/72	47.20	48.85	12.91	2.98	6.1
1972/73	49.20	48.71	15.44	2.92	6.0
1973/74	62.41	58.33	18.09	6.20	10.6
1974/75	54.66	54.76	15.58	6.89	12.6
1975/76	65.64	63.28	19.23	9.90	15.6
1976/77	59.48	64.17	19.14	5.78	9.0
1977/78	72.24	71.76	22.34	7.04	9.8
1978/79	77.53	78.30	24.66	7.49	9.6
1979/80	93.55	87.38	29.06	13.13	15.0
1980/81	81.03	84.30	24.54	11.54	13.7
1981/82	86.20	88.02	29.54	9.42	10.7
1982/83	93.57	90.64	28.55	12.23	13.5
1983/84	83.17	86.52	26.37	7.92	9.2
1984/85	93.14	89.34	24.91	12.32	13.8
1985/86	97.03	92.74	26.10	18.11	19.5
1986/87	98.01	101.61	28.50	15.40	15.2
1987/88	103.35	104.46	30.37	12.39	11.9
1988/89 ²	94.08	99.23	23.02	7.97	8.0
1989/90 ³	107.92	104.63	25.80	10.94	10.5

¹ Based on aggregate of differing local marketing years.

² Preliminary.

³ Forecast.

Source: U.S. Department of Agriculture, Foreign Agricultural Service, Oilseeds and Products Division: production, supply, and distribution database, August 1989.

Appendix table 6—World and U.S. soybean production, exports, ending stocks, and U.S. share, 1964–89

Crop year ¹	Production			Exports			Ending stocks	
	World	United States	U.S. share	World	United States	U.S. share	World	United States
	<i>Million bushels</i>		<i>Percent</i>	<i>Million bushels</i>		<i>Percent</i>	<i>Million bushels</i>	
1964/65	1,074	701	65.2	241	212	88.2	60	30
1965/66	1,165	846	72.6	279	251	89.8	66	36
1966/67	1,340	928	69.3	299	262	87.6	122	90
1967/68	1,388	976	70.4	294	267	90.8	199	166
1968/69	1,532	1,107	72.2	319	287	90.0	357	327
1969/70	1,561	1,133	72.6	462	433	93.7	267	230
1970/71	1,627	1,127	69.3	462	434	93.9	132	99
1971/72	1,734	1,176	67.8	474	417	87.9	110	72
1972/73	1,808	1,271	70.3	567	479	84.5	107	60
1973/74	2,293	1,548	67.5	665	539	81.1	228	171
1974/75	2,008	1,216	60.6	572	421	73.5	253	188
1975/76	2,412	1,548	64.2	707	555	78.6	364	245
1976/77	2,185	1,289	59.0	703	564	80.2	212	103
1977/78	2,654	1,767	66.6	821	700	85.3	259	161
1978/79	2,849	1,869	65.6	906	739	81.6	275	176
1979/80	3,437	2,261	65.8	1,068	875	82.0	482	358
1980/81	2,977	1,798	60.4	902	724	80.3	424	313
1981/82	3,167	1,989	62.8	1,085	929	85.6	346	254
1982/83	3,438	2,190	63.7	1,049	905	86.3	449	345
1983/84	3,056	1,636	53.5	969	743	76.7	291	176
1984/85	3,422	1,861	54.4	915	598	65.3	453	316
1985/86	3,565	2,099	58.9	959	741	77.2	666	536
1986/87	3,601	1,940	53.9	1,047	757	72.3	566	436
1987/88	3,797	1,923	50.6	1,116	802	71.9	455	302
1988/89 ²	3,457	1,539	44.5	846	530	62.7	293	155
1989/90 ³	3,965	1,905	48.0	948	575	60.6	402	285

¹ Based on aggregate of differing local marketing years.

² Preliminary.

³ Forecast.

Source: Converted to bushels from data in U.S. Department of Agriculture, Foreign Agricultural Service, Oilseeds and Products Division: production, supply, and distribution database, August 1989.

Appendix table 7—Soybean production and exports, by foreign exporters, 1964–89

Crop year ¹	Brazil		Argentina		Total foreign	
	Production	Exports	Production	Exports	Production	Exports
	<i>Million bushels</i>					
1964/65	19	3	1	0	373	28
1965/66	22	4	1	0	319	28
1966/67	26	11	1	0	412	37
1967/68	24	2	1	0	412	27
1968/69	39	11	1	0	425	32
1969/70	55	11	1	0	428	29
1970/71	76	8	2	0	500	28
1971/72	135	38	3	0	558	57
1972/73	184	66	10	0	537	88
1973/74	289	105	18	0	746	125
1974/75	363	129	18	0	792	152
1975/76	413	122	26	4	863	151
1976/77	460	95	51	23	897	139
1977/78	351	24	99	72	887	120
1978/79	376	23	136	102	980	167
1979/80	557	56	132	100	1,177	193
1980/81	558	55	129	80	1,180	177
1981/82	472	29	152	79	1,178	156
1982/83	542	48	154	49	1,248	144
1983/84	571	58	257	115	1,420	226
1984/85	672	127	248	109	1,561	317
1985/86	518	44	268	94	1,467	218
1986/87	636	121	257	47	1,661	290
1987/88	662	111	356	77	1,875	314
1988/89 ²	823	169	243	18	1,918	316
1989/90 ³	772	165	386	92	2,060	373

¹ Based on aggregate of differing local marketing years.

² Preliminary.

³ Forecast.

Source: Converted to bushels from data in U.S. Department of Agriculture, Foreign Agricultural Service, Oilseeds and Products Division: production, supply, and distribution database, August 1989.

Appendix table 8—World soybean trade, annual averages, 1978–82 and 1983–87 ¹

Importers	Exporters											
	United States		Brazil		Argentina		China		Other		Total	
	1978–82	1983–87	1978–82	1983–87	1978–82	1983–87	1978–82	1983–87	1978–82	1983–87	1978–82	1983–87
EC–12 (1,000 metric tons)	11,916	9,600	601	1,744	1,368	1,468	0	1	739	802	14,624	13,615
% of importer's imports	81	71	4	13	9	11	0	0	5	6	100	100
% of exporter's exports	55	46	61	83	60	68	0	—	61	71	55	50
Japan (1,000 metric tons)	4,085	4,321	8	136	10	6	135	300	29	44	4,267	4,804
% of importer's imports	96	90	—	3	—	—	3	6	1	1	100	100
% of exporter's exports	19	21	1	7	—	—	82	29	2	4	16	18
Taiwan (1,000 metric tons)	1,054	1,551	0	0	0	0	0	0	0	34	1,055	1,585
% of importer's imports	100	98	0	0	0	0	0	0	0	2	100	100
% of exporter's exports	5	7	0	0	0	0	0	0	0	3	4	6
USSR (1,000 metric tons)	708	573	204	26	410	272	0	389	10	15	1,332	1,273
% of importer's imports	53	45	15	2	31	21	0	31	1	1	100	100
% of exporter's exports	3	3	21	1	18	13	0	38	1	1	5	5
Mexico (1,000 metric tons)	660	1,291	114	67	128	103	0	0	1	3	903	1,465
% of importer's imports	73	88	13	5	14	7	0	0	—	—	100	100
% of exporter's exports	3	6	12	3	6	5	0	0	—	—	3	5
South Korea (1,000 metric tons)	453	840	0	24	0	0	0	2	4	4	457	870
% of importer's imports	99	97	0	3	0	0	0	—	1	—	100	100
% of exporter's exports	2	4	0	1	0	0	0	—	—	—	2	3
Other (1,000 metric tons)	2,859	2,615	54	95	367	320	30	326	430	225	3,740	3,581
% of importer's imports	76	73	1	3	10	9	1	9	11	6	100	100
% of exporter's exports	13	13	6	5	16	15	18	32	35	20	14	13
Total (1,000 metric tons)	21,736	20,792	981	2,091	2,284	2,169	164	1,017	1,213	1,126	26,378	27,196
% of importer's imports	82	76	4	8	9	8	1	4	5	4	100	100
% of exporter's exports	100	100	100	100	100	100	100	100	100	100	100	100

— = Less than 0.5 percent.

¹ For example, the EC–12's 1978–82 average annual imports of 11.9 million tons of soybeans from the United States (column 1, row 1) represented 81 percent of the EC–12's total soybean imports (column 1, row 2) and 55 percent of total U.S. soybean exports (column 1, row 3). Percentages may not add because of rounding.

Source: United Nations. Commodity Trade Statistics, 1962–87. Calendar year commodity import data reported to the United Nations, edited and expanded by Arthur B. Mackie, Agriculture and Trade Analysis Division, Economic Research Service, U.S. Department of Agriculture, to include nonreporting countries.

Appendix table 9—Major protein meals: World supply and use, 1985–89

Item	1985/86	1986/87	1987/88	1988/89 ¹	1989/90 ²
<i>Million metric tons</i>					
Production:					
Soybean	61.06	67.22	67.61	63.92	69.89
Cottonseed	11.10	9.85	11.23	11.60	11.25
Rapeseed	10.26	11.13	12.62	12.37	12.36
Sunflowerseed	7.66	7.54	8.02	8.21	8.48
Fish	6.33	6.04	6.43	6.56	6.57
Peanut	4.23	4.41	4.28	5.15	5.01
Copra	1.89	1.72	1.53	1.58	1.64
Linseed	1.14	1.19	1.13	1.04	1.03
Palm kernel	1.31	1.28	1.43	1.52	1.61
Total	104.96	110.38	114.28	111.95	117.82
Exports:					
Soybean	23.13	25.96	25.21	25.61	27.55
Cottonseed	.94	.83	.98	1.01	1.00
Rapeseed	1.82	1.69	1.92	1.80	1.90
Sunflowerseed	1.91	1.50	1.59	1.67	1.77
Fish	3.16	3.20	3.17	3.34	3.19
Peanut	.53	.69	.71	.74	.76
Copra	1.34	1.25	1.05	.98	1.09
Linseed	.52	.60	.56	.48	.49
Palm kernel	1.06	.98	1.07	1.16	1.23
Total	34.39	36.68	36.26	36.78	38.99
Imports:					
Soybean	23.92	26.63	25.69	25.97	27.69
Cottonseed	.94	.82	.97	.98	.96
Rapeseed	1.73	2.23	1.98	2.06	1.99
Sunflowerseed	1.89	1.65	1.72	1.60	1.73
Fish	3.24	3.19	3.26	3.30	3.31
Peanut	.52	.71	.75	.78	.79
Copra	1.36	1.25	1.10	1.09	1.10
Linseed	.60	.66	.67	.56	.60
Palm kernel	1.02	1.02	1.22	1.11	1.16
Total	35.22	38.16	37.36	37.44	39.32
Consumption:					
Soybean	61.76	67.67	67.66	64.96	70.01
Cottonseed	11.09	10.01	11.20	11.59	11.21
Rapeseed	10.11	11.58	12.57	12.77	12.43
Sunflowerseed	7.67	7.66	8.18	8.17	8.42
Fish	6.30	6.26	6.28	6.50	6.75
Peanut	4.24	4.37	4.37	5.20	5.03
Copra	1.95	1.78	1.58	1.64	1.64
Linseed	1.21	1.26	1.25	1.12	1.13
Palm kernel	1.27	1.27	1.55	1.43	1.51
Total	105.61	111.88	114.63	113.37	118.13

Note: Trade and crush are aggregated using individual marketing years, except Argentina and Brazil, which are adjusted to an Oct.–Sept. year.

¹ Preliminary.

² Forecast.

Source: U.S. Department of Agriculture, Foreign Agricultural Service, *World Oilseed Situation and Market Highlights*, FOP 8–89, August 1989.

Appendix table 10—Major vegetable and marine oils: World supply and use, 1985–89

Item	1985/86	1986/87	1987/88	1988/89 ¹	1989/90 ²
<i>Million metric tons</i>					
Production:					
Soybean	13.85	15.19	15.27	14.50	15.83
Palm	8.06	7.98	8.39	9.20	9.87
Sunflowerseed	6.65	6.57	7.13	7.20	7.52
Rapeseed	6.23	6.86	7.69	7.55	7.54
Cottonseed	3.47	3.06	3.47	3.60	3.49
Peanut	2.96	3.10	3.00	3.61	3.51
Coconut	3.30	2.93	2.65	2.74	2.84
Olive	1.63	1.56	1.90	1.43	1.77
Fish	1.52	1.34	1.40	1.52	1.46
Palm kernel	1.09	1.07	1.21	1.29	1.35
Linseed	.60	.64	.62	.54	.56
Total	49.34	50.28	52.72	53.17	55.75
Exports:					
Soybean	3.15	3.90	3.77	3.53	3.91
Palm	5.36	5.20	5.49	5.86	6.28
Sunflowerseed	2.19	1.79	2.18	2.05	2.04
Rapeseed	1.31	1.66	1.85	1.77	1.61
Cottonseed	.35	.24	.39	.35	.31
Peanut	.33	.36	.32	.27	.29
Coconut	1.61	1.49	1.39	1.18	1.38
Olive	.37	.55	.46	.45	.49
Fish	.85	.75	.74	.94	.82
Palm kernel	.67	.69	.75	.80	.80
Linseed	.23	.29	.24	.20	.22
Total	16.42	16.89	17.57	17.38	18.16
Imports:					
Soybean	3.09	3.80	3.77	3.50	3.78
Palm	5.42	5.07	5.67	5.80	6.40
Sunflowerseed	2.00	1.79	2.03	1.96	1.98
Rapeseed	1.20	1.41	1.50	1.50	1.30
Cottonseed	.31	.27	.38	.36	.34
Peanut	.30	.33	.37	.33	.32
Coconut	1.52	1.36	1.38	1.27	1.43
Olive	.55	.71	.51	.56	.49
Fish	.82	.79	.74	.83	.81
Palm kernel	.66	.67	.79	.77	.82
Linseed	.20	.26	.20	.21	.21
Total	16.07	16.45	17.31	17.08	17.86
Consumption:					
Soybean	13.50	14.76	15.03	14.67	15.55
Palm	7.69	7.91	8.52	8.78	9.79
Sunflowerseed	6.37	6.49	6.99	7.19	7.44
Rapeseed	5.98	6.55	7.17	7.41	7.19
Cottonseed	3.44	3.16	3.44	3.62	3.53
Peanut	2.89	3.08	3.06	3.68	3.53
Coconut	3.04	2.83	2.65	2.84	2.91
Olive	1.77	1.89	1.79	1.76	1.80
Fish	1.42	1.40	1.39	1.49	1.51
Palm kernel	1.05	1.02	1.25	1.26	1.35
Linseed	.56	.60	.58	.54	.56
Total	47.69	49.68	51.88	53.24	55.16

Note: Trade and crush are aggregated using individual marketing years, except Argentina and Brazil, which are adjusted to an Oct.–Sept. year.

¹ Preliminary.

² Forecast.

Source: U.S. Department of Agriculture, Foreign Agricultural Service, *World Oilseed Situation and Market Highlights*, FOP 8–89, August 1989.

Appendix table 11—U.S. soybean acreage, yield, and production, 1950–89

Year	Planted	Harvested	Yield	Production
	----- Million acres -----		Bushels/acre	Million bushels
1950	15.6	13.8	21.7	299.2
1951	15.7	13.6	20.8	283.8
1952	16.4	14.4	20.7	298.8
1953	16.7	14.8	18.2	269.2
1954	18.9	17.0	20.0	341.1
1955	20.0	18.6	20.1	373.7
1956	22.0	20.6	21.8	449.3
1957	22.2	20.9	23.2	483.4
1958	25.3	24.0	24.2	580.3
1959	23.6	22.6	23.5	532.9
1960	24.6	23.7	23.5	555.1
1961	28.0	27.0	25.1	678.6
1962	28.6	27.6	24.2	669.2
1963	29.6	28.6	24.4	699.2
1964	31.7	30.8	22.8	700.9
1965	35.2	34.4	24.5	845.6
1966	37.3	36.5	25.4	928.5
1967	40.8	39.8	24.5	976.4
1968	42.3	41.4	26.7	1,107.0
1969	42.5	41.3	27.4	1,133.1
1970	43.1	42.2	26.7	1,127.1
1971	43.5	42.7	27.5	1,176.1
1972	46.9	45.7	27.8	1,270.6
1973	56.5	55.7	27.8	1,547.5
1974	52.5	51.3	23.7	1,216.3
1975	54.6	53.6	28.9	1,548.3
1976	50.3	49.4	26.1	1,288.6
1977	59.0	57.8	30.6	1,767.3
1978	64.7	63.7	29.4	1,868.8
1979	71.4	70.3	32.1	2,260.7
1980	69.9	67.8	26.5	1,797.5
1981	67.5	66.2	30.1	1,989.1
1982	70.9	69.4	31.5	2,190.3
1983	63.8	62.5	26.2	1,635.8
1984	67.8	66.1	28.1	1,860.9
1985	63.1	61.6	34.1	2,098.5
1986	60.4	58.3	33.3	1,940.1
1987	58.0	57.0	33.7	1,922.8
1988 ¹	58.9	57.4	26.8	1,538.7
1989 ²	60.5	59.1	32.3	1,905.0

¹ Preliminary.

² Forecast.

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, *Crop Production*, annual and monthly issues.

Appendix table 12—Ratios of world soybean exports and ending stocks to world consumption, and U.S. exports to foreign consumption, 1964–89

Crop year ¹	World exports to world consumption	World stocks to world consumption	U.S. exports to foreign consumption
		Percent	
1964/65	21.6	5.4	36.2
1965/66	24.0	5.7	43.8
1966/67	23.2	9.5	38.7
1967/68	22.2	15.0	38.5
1968/69	22.8	25.5	38.7
1969/70	28.1	16.3	51.2
1970/71	26.2	7.5	46.1
1971/72	26.4	6.1	41.3
1972/73	31.7	6.0	48.6
1973/74	31.0	10.6	43.3
1974/75	28.5	12.6	34.1
1975/76	30.4	15.6	40.0
1976/77	29.8	9.0	37.8
1977/78	31.1	9.8	43.0
1978/79	31.5	9.6	42.0
1979/80	33.3	15.0	43.6
1980/81	29.1	13.7	36.6
1981/82	33.6	10.7	43.9
1982/83	31.5	13.5	42.4
1983/84	30.5	9.2	35.1
1984/85	27.9	13.8	27.7
1985/86	28.1	19.5	32.6
1986/87	28.0	15.2	30.9
1987/88	29.1	11.9	31.0
1988/89 ²	23.2	8.0	21.3
1989/90 ³	24.7	10.5	21.7

¹ Based on aggregate of differing local marketing years.

² Preliminary.

³ Forecast.

Source: Calculated from data in U.S. Department of Agriculture, Foreign Agricultural Service, Oilseeds and Products Division: production, supply, and distribution database, August 1989.

Appendix table 13—Coefficients of variation for U.S. soybeans ¹

Period	Planted acres	Yield	Production	Exports	Price received	Value of production
1954–58	0.1023	0.0761	0.1896	0.2041	0.0721	0.1256
1959–63	.0869	.0249	.1097	.1355	.0834	.1847
1964–68	.1015	.0515	.1483	.0970	.0433	.1307
1969–73	.1128	.0147	.1255	.0964	.3317	.4708
1974–78	.0913	.0902	.1665	.1908	.1148	.1843
1979–83	.0441	.0925	.1297	.1026	.1419	.0566
1984–88	.1305	.2267	.2199	.3016	.3839	.1756

¹ Coefficient of variation is a measure of variability which equals the standard deviation divided by the mean.

Part 2: Peanuts

By James D. Schaub and Bruce Wendland

Abstract

The peanut program has led to surplus production and increasing Government costs throughout most of its history. These problems led to farm legislation in 1977 that initiated a two-price poundage quota peanut program, which was continued under the 1981 and 1985 farm acts. The 1981 Act suspended the peanut acreage allotments and decreased the poundage quota each year to eliminate excess peanuts supported at the higher of the two support prices. The Food Security Act of 1985 continued many provisions of the Agriculture and Food Act of 1981 but established guidelines for setting the poundage quota to match use. The peanut program will revert to permanent legislation of acreage allotments and parity supports unless a new program is enacted. An important issue for the upcoming farm legislation is whether to continue the current program or to include peanuts under a more general agricultural program.

Summary

Peanuts are an important oil crop worldwide. Most peanuts produced in other countries are crushed for oil and protein meal. The United States is the main country producing peanuts used in such edible products as peanut butter, roasted peanuts, and peanut candies. U.S. peanut production has long been influenced by agricultural legislation.

Unlike the voluntary programs for wheat, feed grains, rice, and cotton, the peanut program is mandatory. A mandatory program becomes binding on all producers if at least two-thirds of the producers voting in a referendum approve it.

The 1977 and 1981 peanut programs were designed to reduce Government costs, bring domestic supply of quota-supported peanuts more in line with demand, and recognize the possibility of expanding exports. These programs helped move producers toward increased market orientation and, at the same time, eased the transition for the peanut allotment holders and the communities that had become dependent on the old program. A reliable source of high-quality edible peanuts for domestic use and export was maintained. Consumers did not have access to the lower priced additional peanuts produced in excess of the quota level, and imports were restricted.

The current peanut program is a two-price poundage quota system authorized by the Food Security Act of 1985. The 1985 peanut program maintains the same goals as the 1977 and 1981 programs but ties the quota size more closely to domestic demand.

As in the Agriculture and Food Act of 1981, acreage allotments for peanuts were suspended in the 1985 Act; hence, peanut production is technically unrestricted. But additional peanuts are subject to marketing controls and receive a lower support price. Additional peanuts must be contracted for export by August 1 or placed under the loan for additional; the price support for these peanuts is based on the crush value for peanuts, that is, oil and meal prices. The additional price support has remained at \$149.75 per ton since 1986. The quota support price was \$607.47 per ton in 1986 and increased to \$615.87 in 1989.

Quota support prices are to be adjusted on the basis of cost of production, but increases cannot exceed 6 percent per year. Growers are permitted to lease or pur-

chase quota from quota holders as long as the quota remains within county boundaries.

Introduction

Peanuts are one of the world's principal oilseeds, ranking fourth behind soybeans, cottonseed, and rapeseed, with 10 percent of the total production of major oilseeds in 1985-87. Peanut byproducts make sizable contributions to global supplies of edible oil for human consumption and protein meal for livestock feeds. Principal countries producing peanuts are India, China, and the United States. Africa is also an important producing region. Most of the peanuts produced in Asia and Africa are crushed for food oil and animal feed.

Peanuts accounted for 3 percent of the production of major oilseeds in the United States in 1986-88 and ranked 12th in crop value. Soybeans are the dominant oilseed in the United States, with 86 percent of production, followed by cottonseed with 8 percent and sunflowerseed with 2 percent. U.S. peanuts derive most of their value from use of the seed as an edible nut, both in-shell and shelled, and in edible products, such as peanut butter and peanut butter sandwiches and cookies. Peanuts are also crushed to produce oil and meal, but the edible market commands a higher price than the crush market. U.S. peanuts that are rejected from edible channels because of quality factors are crushed. If there is an over-supply of a certain peanut type, those peanuts may be crushed. Peanut oil and peanut meal face strong competition from products derived from soybeans, cottonseed, and sunflowerseed.

Before 1977, U.S. growers produced considerably more peanuts than the domestic edible market could absorb at the support price. The peanut program costs to the Government were increasing. The 1977 and 1981 peanut programs were designed to reduce Government costs and to bring domestic supply and demand levels for peanuts used in edible products into balance. They were also designed to ease the transition for the peanut producers and their communities as the traditional program—largely unchanged since the 1930's—was replaced by shrinking poundage quotas for peanuts used in edible products. The 1985 program continued most of the provisions of the 1981 Act and sought to better match supply and demand.

The current program provisions expire after the 1990 crop. Without specific legislative action, the former

allotment and marketing quota provisions would again be applicable.

Structure of the Peanut Industry

The United States produced nearly 4 billion pounds of peanuts with a farm level value over \$1 billion in 1988. There are relatively few farms harvesting peanuts compared with farms harvesting corn, wheat, and soybeans. Production is concentrated in nine States that planted 1.66 million acres in 1988.

Production Characteristics

Soil type, climate, and operation of the peanut program determine the location of peanut production. Peanuts are best adapted to well-drained, light-textured soils and, depending on variety, require from 120 to 150 days from planting to maturity. Although the current peanut program no longer restricts production through acreage allotments, the poundage quota system still largely follows the historic allotment pattern. Peanuts are often grown in rotation with other crops, including wheat, soybeans, and corn.

Geographic Distribution of Production

There are three peanut-producing regions: the Georgia-Florida-Alabama region, referred to as the Southeast; the Texas-Oklahoma region, referred to as the Southwest; and the Virginia-North Carolina region, referred

to as the Virginia-Carolina region. Seven States grow 98 percent of the U.S. peanut crop. Georgia is the leading peanut-producing State, accounting for about 45 percent of U.S. production. For 1986-88, the Southeast produced 65 percent of the peanuts, the Southwest 17 percent, and the Virginia-Carolina region 18 percent (table 1).

During the last three decades, the Southeast's share of U.S. production increased, but declined slightly in 1986-88 because of droughts in 1986 and 1987. The Southwest's share has ranged from 15 percent to 26 percent, and the Virginia-Carolina share has dropped. Total peanut acreage fell between 1979 and 1982 but has trended upward since then. Planted acreage has moved in line with changes in the national poundage quota since 1984.

Structure of Peanut Farms

According to the 1987 Census of Agriculture, 18,905 farms harvested peanuts. Of these farms, 18,529 were located in the nine peanut-producing States covered by USDA's *Crop Production* reports. The total number of farms harvesting peanuts was 23,046 in 1978. The harvested acreage per farm was about 76 acres in 1987 and 53 acres in 1978 and 1982.

Fifty-seven percent of the farms harvesting peanuts in 1987 had harvested acreage of less than 50 acres and 1 percent had harvested acreage of over 500 acres (table 2). Of the peanuts harvested, 35 percent came

Table 1—U.S. peanut production

Region	1951-60	1961-70	1971-80	1981-85	1986-88
	<i>Percent</i>				
Southeast	49.2	51.1	61.6	66.4	64.5
Southwest	17.7	26.3	19.0	15.1	17.4
Virginia-Carolina	33.1	22.6	19.4	18.5	18.1

Table 2—Number of farms harvesting peanuts and pounds of peanuts produced, by harvested acreage size distribution, 1987

Harvested peanut acres	Farms		Production	
	Number	Percent	Million pounds	Percent
1-49	10,802	57.1	464	13.6
50-99	3,567	18.9	580	17.0
100-249	3,348	17.7	1,201	35.3
250-499	949	5.0	737	21.7
500-999	206	1.1	304	8.9
1,000 and over	33	.2	118	3.5
Total	18,905	100.0	3,404	100.0

Source: 1987 Census of Agriculture.

from farms harvesting an average of 100-249 acres. The large number of farms harvesting fewer than 50 acres of peanuts accounted for about 14 percent of the total.

Nearly all of the peanut poundage quota is allocated to farmers in nine States, with a small amount distributed to farmers in seven other States. Sixty percent of the basic poundage quota was allocated to the Southeast, 21 percent to the Southwest, and 19 percent to the Virginia-Carolina region in 1988. The largest allocations were Georgia, 577,034 tons; Alabama, 187,875 tons; and Texas, 185,702 tons. The States with the smallest basic poundage quota (less than 1,000 tons) were Arizona, California, and Missouri.

A 1982 cost of production survey, which included a sample of farms in the seven largest peanut-producing States, indicated that the split between quota production on owned and rented quota is about 50-50. The 50 percent of rented quota peanut production was further broken down to show that 9 percent was attributed to producers who rented quota only, while the remaining 41 percent was attributed to producers who rented the quota with land. Quota lease rates vary across States and between counties within States. Lease rates have trended upward since 1978 and are estimated to average about 7.5 cents per pound in the Southeast in 1987 (Fabre).

The peanut cost of production survey indicated that soybeans were another important crop on farms growing peanuts in the Southeast. In Georgia, about 19 percent of cropland per farm was planted to peanuts and nearly 42 percent was planted to soybeans. In North Carolina and Virginia, soybeans and corn accounted for over 60 percent of cropland planted. In the Southwest, wheat was the primary other crop grown on farms planting peanuts. Of the farms

harvesting peanuts in 1978, 43 percent received over 50 percent of their total value of sales of agricultural products from sugar, Irish potatoes, hay, peanuts, and other field crops; 11 percent from cash grains; 17 percent from general crops; and 17 percent from live-stock.

Types of Peanuts

Three main types of peanuts are grown in the United States: Florunners, Virginia, and Spanish. The Southeast grows mostly the medium kernel runner peanuts. The Southwest used to grow two-thirds Spanish and one-third runner but now grows more runners than Spanish. Virtually all the Spanish peanut production is in Oklahoma and Texas. The Virginia-Carolina region grows mostly the large-kernel Virginia peanut. A fourth type, the Valencia, is grown in New Mexico.

In 1987/88, runner peanuts accounted for about 78 percent of peanuts used in domestic edible products, Virginia peanuts accounted for about 14 percent, and Spanish peanuts accounted for about 8 percent (table 3).

Trends in Domestic and Foreign Markets for Peanuts

Except for years when peanuts have been in short supply because of drought, domestic food use has grown steadily since World War II. The biggest food use of peanuts is peanut butter. Crushing peanuts for oil and meal varies from year to year, primarily because of fluctuations in production and foreign demand. U.S. peanut exports are small compared with domestic use. Major export markets for U.S. peanuts are the European Community, Canada, and Japan.

Table 3—Peanuts used in edible products, 1979-87

Year ¹	Runner	Virginia	Spanish	In-shell ²	Total
	<i>Million pounds ³</i>				
1979/80	977	169	147	1,151	1,444
1980/81	871	99	106	90	1,166
1981/82	990	138	97	151	1,376
1982/83	992	215	102	155	1,464
1983/84	1,032	163	116	130	1,441
1984/85	1,051	176	115	159	1,501
1985/86	1,092	207	123	176	1,598
1986/87	1,053	281	126	162	1,622
1987/88	1,153	217	115	141	1,626

¹ August-July marketing year.

² To convert from in-shell to shelled basis, multiply the in-shell weight by 0.7519. Most peanuts sold in the shell are Virginia peanuts; Valencia peanuts are also used.

³ Shelled basis.

Edible Peanuts

Peanut manufacturers produce three principal products: peanut butter, packaged nuts (includes salted, unsalted, flavored, and honey-roasted nuts), and peanut candies. Almost half of all peanuts processed in the United States for edible purposes are used in the manufacture of peanut butter (table 4). Packaged nuts account for almost one-third of all processed peanuts. Some of these are roasted in the shell, commonly referred to as "ballpark" peanuts, while a much larger quantity is used as shelled peanuts packed as dry-roasted peanuts, salted peanuts, or salted mixed nuts. Some peanuts are ground to produce peanut granules and flour.

Dry-roasted and salted peanuts compete with other edible nuts, such as almonds, cashews, and pistachios. Edible peanuts can complement tree nuts in mixed nut packs but can also substitute for tree nuts up to some maximum level depending on relative prices. Peanut candy accounts for about 20 percent of all processed peanuts. Peanuts are the dominant shelled nut used in candies, followed by almonds. Thus, such factors as cocoa and sugar prices affecting the candy market indirectly affect the demand for edible peanuts.

Unshelled Virginia peanuts are roasted for use as ballpark peanuts or cleaned, in-shell peanuts. As shelled peanuts, 50-60 percent of Virginias are used as cocktail nuts and salted peanuts and 50-60 percent of runners are used in peanut butter. Salted nuts and candy each account for about 20 percent of shelled runner use. Spanish peanut use is about evenly divided among salted nuts, peanut butter, and candy. Runners are the most important type for all shelled uses. Virginia peanuts dominate the roasted in-shell market.

The Valencia peanut with its long shell containing three or four kernels is excellent for roasting in the shell.

Peanut Oil and Meal

In addition to edible uses, the peanut can be crushed into oil and meal. Peanuts rank among the world's principal oilseeds but contribute only insignificant quantities to the availability of edible oil and protein meal in the United States. In marketing years 1984-87, peanut oil ranked sixth (6 percent) in production of the world vegetable and marine oils, behind soybean oil (29 percent), palm oil (16 percent), sunflowerseed oil (13 percent), rapeseed oil (13 percent), and cottonseed oil (7 percent). Peanut meal ranked sixth (5 percent) in production of major protein meals, on a 44-percent protein meal equivalent, following soybean meal (61 percent), cottonseed meal (9 percent), fish meal (9 percent), sunflowerseed meal (7 percent), and rapeseed meal (7 percent). In marketing years 1985-87, U.S. peanut crush averaged 629 million pounds, or about 16 percent of peanut production. In comparison, soybeans crushed for oil and meal totaled more than 1.1 billion bushels (68 billion pounds).

Oilstock peanuts are generally those that have been rejected or diverted from edible channels. Diversion may be due to oversupply of a certain type. Rejections include "pick-outs" from edible nuts and other low-quality peanuts, such as Segregation 3 peanuts, those containing a toxin-producing mold, such as aflatoxin. Rejects also include improperly stored peanuts that are weathered (shriveled and wrinkled), infested by insects, or moldy. Small kernels, including 14/16 sheller grades, have been made ineligible for domestic edible use by the Peanut Administrative Committee (PAC).

Table 4—U.S. food uses of peanuts, 1979-87

Year ¹	Peanut butter	Salted peanuts	Peanut candy	Sandwich snacks ²	Other uses	Cleaned in-shell ³	Total
<i>Million pounds ⁴</i>							
1979/80	700	285	258	30	20	151	1,445
1980/81	589	205	238	24	20	90	1,166
1981/82	654	278	256	23	15	151	1,377
1982/83	678	308	284	22	17	155	1,464
1983/84	671	302	298	24	15	130	1,441
1984/85	697	309	290	26	19	159	1,501
1985/86	701	359	314	25	24	176	1,598
1986/87	679	384	321	34	41	162	1,622
1987/88	701	374	326	46	38	141	1,626

¹ August-July marketing year.

² Peanut butter sandwich snacks sold commercially.

³ To convert from in-shell to shelled basis, multiply the in-shell weight by 0.7519.

⁴ Shelled basis.